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NESTING HABITS OF *PHAINOPEPLA NITENS* IN CALIFORNIA.

BY FLORENCE A. MERRIAM.

AT Twin Oaks, San Diego County, California, in the spring of 1894, I had unusual opportunities for studying Phainopeplas. Five or six pairs nested in the valley and collected to eat the berries of the pepper trees in my front yard. I counted as many as four males and two females on the trees at one time.

In feeding, the birds occasionally flew against a bunch of berries, as Chickadees do, clinging while they ate; and I once saw one hover before a bunch while eating, as a Hummingbird whirrs under a flower. More frequently they lit on a branch from which they could lean over and pick off the fruit at leisure. I never actually saw them eat anything but peppers, but at one time when the brush was full of millers, the birds seemed to be catching them; and they sometimes made short sallies into the air as if for insects. They did this much as a Kingbird does, flying up obliquely and going down the opposite side of the angle.

Their flight was interesting. In leaving the pepper trees to go back to their nesting ground, they uniformly rose obliquely high into the air,—sometimes, I should judge, as high as one hundred feet,—and then flew on evenly, straight to their destination, several pairs going so far that they would disappear up a side cañon, or, as black specks, would be lost in the fog down the valley. When watching the flight of Phainopeplas, Mourning Doves often passed close beside me, and I was struck by the contrast in motion. The Dove cut the air, swerving to one side as it flashed by, and its free whirling flight served to emphasize the calm, even rowing of the Phainopepla. Occasionally the birds flew in an undecided way, still high and even, but changing their direction by sudden jerks. Frequently, when nearing the nest tree, a male would close his wings and shoot obliquely down, tilting his tail for a brake. One of them used to fly in at a height of about ten feet, waver as he came near, as if slowing up, and then after turning his head to look down and place the nest, tilt down in the usual labored way, his tail pressing the air. Not

until he was nearly through building did he discover that it was easier to slow up in time to fly down to the nest.

I once saw an odd flight. The bird flew out horizontally with its high crest erect; the effect was very droll. Indeed, the Phainopepla's expression changes as much with the position of the crest as the Waxwing's does. Ordinarily the high crown gives the bird a dignified, distinguished air, but when lowered in anger it adds a sudden menace as he darts at his enemy.

In watching the birds at their nests, I found that they had a number of calls. The commonest was uttered in the same tone by both male and female, and was like the call of a young Robin. In giving it, they flashed their tails, showing the square corners conspicuously. The male also had a harsh cry of warning, drawn out like *ca-rack* or *ca-ra-ack*. In addition, he had a scold and a note suggesting the Meadowlark. The Phainopepla's ordinary song had some weak squeaking notes, but it also had phrases of rich blackbird quality, recalling the *o-ka-lee* of the marshes. One of these was a high keyed *whet'-dle-ah*. Other parts could be roughly syllabified as *kit-er-ah-at* and *cher-nack'-ec*. The song in flight was bright and animated. I once heard a bird break out as he came down from a sally into the air, and he often flew away from the nest singing. Sometimes I thought he even sang in the nest. Of the other birds heard when listening to the Phainopepla, none were so common as the Wren-Tit (*Chamea fasciata henshawi*) and there could be no sharper contrast than that between the slow, distinct, descending scale of the Wren-Tit and the rapid runs and jumbled notes of the Phainopepla. Dr. Coues speaks of the evening song as a 'requiem,' and Professor Evermann dwells upon its plaintive quality. As I never watched the birds at dusk, I never heard this song, but the character of the day songs was markedly cheerful. Indeed, to me the Phainopepla's song was pleasing in spite of its jumbled notes, not merely because of the flute-like quality of some of its tones, but pre-eminently because of the bright, vivacious way in which it was uttered. However, with these general characters, even in the day time the song varied greatly, ranging from the soft lay which the bird warbled to himself as he sat in the sun to the rich and tender musical outburst with which he greeted his mate.

By following the birds as they flew from the pepper trees, I found four nests. They were all on the border or in the midst of dense chaparral. The valley had been almost cleared of brush and planted to grain, orchards and vineyards; but the desert-loving *Phainopepla* went back into the brush at the foot of the hills. One 'island' of brush was left in the middle of the rich valley, and this attracted them strongly. I found two of their nests there and suspected three. Of the four that I did find, all were built in low oaks, two not eight feet above the ground, and two under five. One was in a narrow socket between two small branches, and another was placed on a horizontal limb. All the nests were broken up, and the three that I took after they were deserted were made of about the same materials: small bits of plant stems, oak blossoms and other small flowers. The materials were so fine that, although I sat within a few yards of the nests when the birds were at work, I rarely saw them bring anything, except in the few instances when they came with grass dangling from their bills.

As soon as I began to watch the *Phainopepla*'s nests, I discovered that the males did almost all the building. This was especially surprising because in direct opposition to the laws of protective coloration, for their black plumage and white wing markings made them striking figures as they went about their work. On the other hand, the dull colors of the females toned in admirably with the gray brush in which the nests were situated. Moreover, their plumage was most inconspicuous with the sun on it, and in the low brush where the nests were, the sun beat down constant'y.

I saw three pairs of birds building, and in each case the males were doing most of the work. Two of the nests I studied closely, watch and note-book in hand, in order to determine the exact proportion of work done by each bird. The appended tables show the results. One nest was watched two hours and a half, during a period of five days, in which time the male went to the nest 27 times; the female, only 3. The other nest was watched 7 hours and 35 minutes, during the period of ten days, in which time the male was at the nest 57 times; the female, only 8. Taking the total for the two nests: in 10 hours 5 minutes, the male went to

the nest 84 times; the female, 11. That is to say, the females made only 13 percent of the visits. In reality, although they went to the nest 11 times, the ratio of actual work might safely be much reduced, for in watching them I was convinced that as a rule they came to the nest not to build, but to inspect the building done by their mates: indeed, at one nest I saw nothing to make me suspect that the female did any of the work. Her coming was usually welcomed by a joyous song, but once the evidence seemed to prove that she was driven away; perhaps she was too free with her criticisms! In another case the work was sadly interrupted by the presence of the visitor, for while she sat in the nest her excited mate flew back and forth as if he had quite forgotten the business in hand. In several instances, while the males were at work building, or were guarding the nests, the females went off by themselves, and I saw two of them return home high in the air as if they had come from a distance. I suspected that they had been to lunch at the pepper trees, for they came from that direction. As they approached, their mates who had been sitting about indifferently before, suddenly became alarmed and warned them away from my neighborhood.

At other times when I rode in, the males would make large circles, seventy-five feet or more above me, as if to get a clear understanding of the impending danger. This was when small nest hunters were about, and the birds were some whose nests I could not find. Those whose nests I studied soon lost their fears, and were perfectly natural at their nests, even answering my calls and attempted imitations of their songs.

After finding that the males did most of the building, I was anxious to see how it would be when the brooding began. Three of my nests were broken up beforehand, however, and the fourth was despoiled after I had watched the birds on the nest one day. Nevertheless, the evidence of that day was most interesting, as far as it went (see Tables, Nest No. 2, June 25). It proved that while the female lacked the architect's instinct, she was not without the maternal instinct. There were two eggs in the nest, and in the one hour that I watched, each bird brooded the eggs six times. Before this, the female had been to the nest so much less than the male that she was much shyer; but now that the

eggs were there, although my horse frightened her by trampling down the brush near by, it was she who first overcame her fears and went to cover the eggs.

When building, the male was an enthusiastic worker. He would fly back and forth from the ground to the nest with his material so rapidly that it kept me busy recording his visits. As the tables show, he once went to the nest four times in four minutes (Nest No. 1, May 27); at another time, 17 times in one hour four minutes (Nest No. 2, June 9). Sometimes he stayed at the nest only half a minute, and when he stayed three minutes, it was so unusual that I recorded it. However, he worked spasmodically. On June 9, he came 17 times in one hour, but during the next half hour, he came only 5 times. The birds seemed to divide their mornings into quite regular periods. When I awoke at 5.30 I would hear them at the pepper trees breakfasting, and some of them were generally there as late as eight o'clock. From eight to ten they worked with a will, though the visits usually fell off after half past nine. When working in this more deliberate way, the male would go to his perch on an adjoining tree and sit and preen himself, catch flies, apparently, or sing between his visits. Once he sat on the limb in front of the nest for nearly ten minutes. By ten o'clock, I found that I might as well go to watch other birds, as little would be going on with the Phainopeplas. They often flew off to the pepper trees.

In building, the birds laid in the fine bits of weed gently, weaving in the longer stems a little and moulding more or less; but the compactness of the nest came rather from the mass of material than from any effort of workmanship.

It would be interesting to know how commonly the males do the building, and if the custom prevails, how it affects the broods that should keep up the Phainopepla population. None of the four nests I found came to anything. As there was a school-house near the nesting ground, the birds should have paid better heed to the laws of evolution. Supposing that the ancestors of these birds came from deserts unfrequented by small boys, it would be interesting to know if civilization will eventually modify the habits of the Twin Oaks' Phainopeplas.

RECORD OF VISITS OF MALE AND FEMALE *Phainopepla* TO NEST WHILE BUILDING. SPRING OF 1894.

Nest No. 1. DATE.	TIME AND SEX.												DAILY TOTALS.					
	Hrs.	Min.	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	Hrs.	Min.	♂	♀		
May 25															15	5	1	
26									♂ 9:54						47	9	1	
27															56	5	1	
28															2	2	—	
29															30	6	—	
Total for Nest No. 1.																		
Nest No. 2.															2	30	27	3
June 8															1	10	9	1
9																		
															1	48	22	2
11															2	16	14	4
12															1	5	7	1
18															1	16	5	
Total for Nest No. 2.																		
Total for both Nests.																		
7 35 57 8																		
10 5 84 11																		

¹ Female stayed on nest one minute and male came twice while she was there.² I was absent from 9:50 to 10 o'clock.